

REMARKS

Rejections Under 35 U.S.C. § 112

The Examiner has rejected Claim 9 under 35 U.S.C. § 112, second paragraph as being indefinite. In particular, the Examiner states that it is "not understood how an oxidizing step can form a nitride layer."

Although Claim 9 has been amended to replace the recitation of oxidizing with the recitation of "conducting said source/drain reoxidation," Applicant presumes that the same issues will arise with the Examiner.

Applicant respectfully traverses the rejections and submits that the skilled artisan will readily appreciate the meaning of the claim in view of the specification as filed. As clearly explained on page 6, line 3 to page 7, line 17, nitridation in the illustrated embodiment is accomplished by a nitrogen implantation followed by a thermal oxidation. In particular, the oxidation is described as resulting in the silicon nitride layer:

Unlike prior art drive steps, however, oxidation of the substrate causes upward migration and consumption of silicon atoms from the implanted areas 118 (as well as from the gate poly 112) to form the oxide layer 130. This is accompanied by upward motion of implanted nitrogen atoms. The nitrogen concentration difference between the growing oxide layer and the implanted areas 118 provides the driving force for the reaction. Thus, the implanted nitrogen atoms migrate to the growing oxide layer 130 at the substrate surface *and a silicon nitride layer 131 is formed* over the implanted source/drain regions 11.

Application at p. 6, ll. 24-31 (emphasis added).

Thus, it is clearly explained in the application as filed that the oxidation step serves to form the silicon nitride layer from the previously implanted nitrogen atoms.

In view of the specification, Applicants respectfully submit that the skilled artisan will readily appreciate the language of Claim 9, and that the claim is definite within the meaning of 35 U.S.C. § 112, second paragraph.

Rejections Under 35 U.S.C. § 103

The Examiner has rejected all pending claims as being unpatentable over Ahmad et al. (U.S. Patent No. 5,405,781) in view of Arai et al. (U.S. Patent No. 5,972,783). In particular, the Examiner states that Ahmad does not describe implanting an insulator element region into the

substrate, but that Arai does disclose implanting an insulator element (namely nitrogen) into the substrate to better control the crystallinity.

Applicant respectfully traverses the rejections and submits that the references fail to provide a *prima facie* case of obviousness. In particular, while the Examiner presumably has supplied all of the individual elements of the independent claims, this is not sufficient to show *prima facie* obviousness. Rather, the Examiner must show a reason or suggestion in the art to combine the elements *in the manner claimed*. *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1456 (Fed. Cir. 1998) ("There must be evidence that 'a skilled artisan, confronted with the same problems as the inventors and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.'").

The rejections fail to acknowledge the sequence of steps recited in the independent claims. Each of the pending claims specifically recites a process in which nitrogen implantation is followed by source/drain reoxidation (as amended). As Ahmad does not teach any nitrogen implantation, and as Arai does not teach source/drain reoxidation at all, it is clear that the sequence of nitrogen implantation relative to a source/drain reoxidation is not established by either of the references, individually or in combination. It is only in hindsight that the skilled artisan would apply the nitrogen implantation of Arai prior to the source/drain reoxidation of Ahmad. In fact, the Office Action does not even acknowledge that this sequence is required by the claims.

In contrast, as clearly set forth in the above-quoted section of the application with respect to the § 112 rejection, Applicant has specifically taught advantages and differences in the operation of a sequence in which nitrogen implantation is followed by a thermal oxidation step.

Furthermore, in order to expedite prosecution, Applicant has amended the claims to more clearly recite implanting nitrogen and to more clearly recite a source/drain reoxidation or thermal oxidation, rather than the broader generic terms used in the claims as filed.

In view of the above comments, Applicant respectfully submits that the claims are patentable over the prior art of record.

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CONCLUSIONS

In view of the foregoing amendments and remarks, Applicant respectfully submits that the application is in condition for allowance and respectfully requests the same. If, however, some issue remains that the Examiner feels can be addressed by Examiner Amendment, the Examiner is cordially invited to call the undersigned for authorization.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

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By: Adeel S. Akhtar
Adeel S. Akhtar
Registration No. 41,394
Attorney of Record
Customer No. 20,995
(415) 954-4114

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